


Ramsey's Lost Counterfactual

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ABSTRACT

In contemporary works on conditionals, the *Ramsey test* is a procedure for the evaluation of conditional sentences. There are several versions of the test, all inspired by a footnote by the British philosopher and mathematician Frank Ramsey, in his *General Propositions and Causality*. However, no study on Ramsey's own account of conditionals has been put forth so far. Furthermore, the footnote seems to cover indicative conditionals only, and this has led to the belief that no account of counterfactuals can be found in Ramsey's work. In this paper, I recover Ramsey's account of counterfactuals and show that it is sketched in the footnote too. The result is a well-developed account of counterfactuals that resembles many contemporary ones. But Ramsey uses the same approach also for other types of conditionals, and this casts doubts on the current criteria for the classification of this type of sentences.

KEYWORDS

Ramsey; Ramsey test; counterfactuals; conditionals

1. Introduction

The aim of this paper is to present Frank Ramsey's account of counterfactual conditionals. In contemporary literature on conditionals, the *Ramsey test* denotes a procedure for the evaluation of conditional sentences (see, for instance, *Stalnaker 1968* and *Adams 1975*). More recently, a version of the Ramsey test has been used as a recipe for belief revision (e.g. *Gärdenfors 1986*). There are several versions of the test, but they are all inspired by a footnote by Ramsey in his *General Propositions and Causality* (*GPC*).

The first time Ramsey's footnote has been mentioned in a work on conditionals is in Chisholm's *The Contrary-to-Fact Conditionals* (*Chisholm 1946*, 298). Here, Chisholm follows Ramsey's suggestions to develop an analysis of counterfactual conditionals. Curiously, ever since, Ramsey's footnote has been read as covering indicative conditionals only. And today, the shared opinion is that no account of counterfactuals can be found in Ramsey. This paper shows that this assumption is unwarranted: Ramsey has an account of this type of conditionals, which is also sketched, *in nuce*, in his footnote.

To recover Ramsey's account of counterfactuals I proceed as follows: Section 2 introduces Ramsey's footnote and its current interpretation. In Section 3, starting from Ramsey's footnote, I focus on counterfactuals in *GPC*. Then I present some notions of Ramsey's epistemology, involved in his account of counterfactuals. In the last part of the section,

I resort to another note by Ramsey, *The Meaning of Hypothetical Propositions* (MHP). Written one year before *GPC*, this note has been generally overlooked both in the literature on conditionals and in the studies on Ramsey's philosophy. The note lays out the same account of counterfactuals presented in *GPC*, but in a more detailed way. I return to *GPC* in Section 4, where, thanks to the *cake example*, Ramsey's ideas can be seen at work. Finally, in Section 5, I consider some controversies of Ramsey's view, related to the current classification of conditionals into subjunctives, counterfactuals and indicatives. I argue that these categories play no role in Ramsey, and perhaps they should play none in contemporary theories of conditionals too.

2. The Footnote and Its Interpretation

This is Ramsey's footnote, source of inspiration for all the Ramsey tests (*GPC*, 247, fn. 1, emphasis in original):

If two people are arguing 'If p will q ?' and are both in doubt as to p , they are adding p hypothetically to their stock of knowledge and arguing on that basis about q ; so that in a sense 'If p , q ' and 'If p , \bar{q} ' are contradictories. We can say they are fixing their degrees of belief in q given p . If p turns out false, their degrees of belief are rendered *void*. If either party believes \bar{p} for certain, the question ceases to mean anything to him except as a question about what follows from certain laws and hypotheses.

In contemporary literature on conditionals, the focus is on the first part of the footnote. This has led to consider Ramsey's contribution to the study of conditionals as limited to his suggestion about the use of conditional probability. Consider, for instance, Adams (1975, 3, emphasis in original):

The fundamental assumption of this work is: *the probability of an indicative conditional of the form 'if A is the case then B is the case' is a conditional probability*. This assumption, which has been suggested and then apparently abandoned by such authors as Ramsey and Jeffrey, is that the probability of 'if A then B' should equal the *ratio* of the probability of 'A and B' to the probability of A (ratio of conjunction of antecedent and consequent to antecedent).

Adams takes literally Ramsey's suggestion about degrees of belief and develops a probabilistic logic, with a probabilistic criterion of validity for inferences containing conditionals. In *Truth and Probability* (*TP*, 180), Ramsey defines the 'degree of belief in q given p ' by the *ratio formula*:

$$P(q | p) = \frac{P(p \wedge q)}{P(p)}, \quad \text{if } P(p) > 0.$$

According to Adams' reading, we have that:¹

$$P(\text{if } p \text{ then } q) = P(q | p).$$

It follows that whenever the antecedent p is (believed to be) false, namely, the degree of belief in p is equal to 0, conditional probability is undefined. Hence Adams' analysis works

¹ Sometimes this is also written as $\text{Bel}(\text{if } p \text{ then } q) = P(q | p)$, where *Bel* stands for 'degree of belief'. However, in the previous quote Adams speaks of 'the probability of an indicative conditional', so this formulation is here adopted.

for indicative conditionals, but it excludes counterfactuals, whose antecedents are (and believed to be) ‘contrary-to-facts’.²

Following Adams, Edgington (1995) too focuses on the first part of the footnote, arguing that Ramsey supports what is today known as *the Thesis* or *the Equation*³ – i.e. $P(\text{if } p \text{ then } q) = P(q \mid p)$. She embraces Adams’ idea that conditional probability defines the acceptability of indicatives, which means that another solution, apparently not suggested by Ramsey, must be found to deal with other types of conditionals.

Stalnaker (1968) extends Ramsey’s suggestion to cover counterfactuals. He first rephrases Ramsey’s footnote: ‘add the antecedent (hypothetically) to your stock of knowledge (or beliefs), and then consider whether or not the consequent is true’. However, ‘Ramsey’s suggestion covers only the situation in which you have no opinion about the truth value of the antecedent’. Hence, he develops a possible world semantics in order to evaluate all types of conditional sentences, including counterfactuals.

Lewis (1973) says that ‘F.P. Ramsey in *Foundations* (Routledge & Kegan Paul: London, 1978): 143, mentions such thought experiments, but he seems to have in mind assertability conditions for indicative conditionals rather than counterfactuals’.

Bennett (2003) states: ‘Ramsey test thesis does not hold for subjunctive conditionals’.

More recently, the footnote has also been used in belief revision theories. This is the version proposed by Gärdenfors (1986): ‘Accept a proposition of the form “if A then C” in a state of belief K if and only if the minimal change of K needed to accept A also requires accepting C’.

Despite the theories inspired by Ramsey’s footnote are all different, they all focus on the first part of the footnote. This limited focus has conveyed the idea that Ramsey does not have an account of counterfactuals (namely, of those conditionals that cannot be evaluated using conditional probability). For instance, Edgington (*MacBride et al.* 2020) claims that ‘there are a few remarks about counterfactuals in Ramsey’s paper, but no settled view of them is presented’. Yet, Ramsey has a well developed account of counterfactuals, that is also mentioned, in a nutshell, in the footnote.

3. Counterfactuals

The last part of Ramsey’s footnote is rarely quoted in contemporary works on conditionals. However, it contains an explicit reference to counterfactuals: ‘If either party believes \bar{p} for certain, the question ceases to mean anything to him except as a question about what follows from certain laws or hypotheses’. When a person believes p for certain and wonders ‘if p , q ?’, she is considering what would have happened, had p occurred – she is considering a counterfactual situation. Hence, I argue that Ramsey’s footnote contains an explicit reference to counterfactuals.

² ‘Indicatives’ refers to all those conditionals expressed in the indicative mood. This category is usually opposed to ‘subjunctives’, conditionals in the subjunctive mood. Very often, subjunctive conditionals are also counterfactuals and the two categories can overlap. I will return to this in the last section of the paper. Just keep in mind that, until then, I will use ‘subjunctive’ and ‘counterfactual’ interchangeably. There are several attempts to extend the probabilistic approach to cover also counterfactuals, one by Adams (1975) himself, who uses prior probabilities, treating counterfactuals as the epistemic past tense of indicative conditionals. For other attempts, see, among others, Skyrms 1980 and Leitgeb 2012a, 2012b.

³ See Read and Edgington 1995 and Bennett 2003, respectively.

According to the footnote, wondering about a conditional whose antecedent is believed to be false cannot mean fixing the degree of belief in q given p . Of course, this is mainly for the unsuitability of the ratio formula for antecedents whose probability is equal to zero. But this is also philosophically justified. According to Ramsey, the degree of belief in q given p expresses a bet, which is clearly called off if the antecedent is believed for certain to be false—i.e. the degree of belief in p is equal to 0 (see *TP*, 180). Since the degree of belief in q given p expresses a decision to make, it is meaningless when the condition on which we are deciding did not realise – even if we just believe it did not. Indeed ‘that I cannot affect the past, is a way of saying something quite clearly true about my degrees of belief’ (*GPC*, 250). Therefore, when a person wonders what would have happened, had something occurred, that, in fact, did not, the conditional she asserts manifests ‘what follows from certain laws or hypotheses’ for her.

Counterfactuals are often used to express praise or blame and they have a peculiar relation with laws and generalisations – *variable hypotheticals* in Ramsey’s vocabulary (*GPC*, 246):

That we think explicitly in general terms is at the root of all praise and blame and much discussion. We cannot blame a man except by considering what would have happened if he had acted otherwise, and this kind of unfulfilled conditional cannot be interpreted as a material implication, but depends essentially on variable hypotheticals.

Variable hypotheticals determine our judgement of counterfactual situations, whether, for instance, q or $\neg q$ would have followed had p happened. To understand what this exactly means, we first need to understand what variable hypotheticals are. I will turn to this in the next section.

3.1. Variable Hypotheticals

Generalisations are the subject of Ramsey’s *GPC*. He rejects the idea that open generalisations, ranging over an infinite domain, can be thought of as infinite conjunctions. ‘All men are mortal’ cannot be a conjunction because this would require men to be able to think of and list all the men that live today, lived and will live and this ‘goes beyond what we know and want’ (*GPC*, 237). In fact, whenever we use these sentences, we always refer to a finite class, which is manageable by our mind. For this reason, at first glance, these generalisations look like (finite) conjunctions because we use them as such. Moreover, when we wonder about their truth, we are forced to turn them into conjunctions, namely to list the individuals that we know satisfy the predicate of the generalisation – and this is clearly a finite process. But then, we generalise out of what we know and extend the application of the predicate also to what we do not know, to the infinite. Hence, this type of generalisations are not propositions at all. They are ‘rules for judging “If I meet a ϕ , I shall regard it as a ψ ”’ (*GPC*, 241). We can disagree about them, but they cannot be negated. The sentence ‘All men are mortal’ expresses the rule: ‘every time I meet a x that is a man, I should judge it as mortal’.⁴

⁴ A similar analysis of generalisations as non-propositional rules is suggested by Weyl (1998). Indeed, this view of generalisations has been read as Ramsey’s turn to mathematical finitism, see Majer 1989, Majer 1991, Misak 2020, Sahlin 1990, and Methven 2015, who disagrees with this reading.

These generalisations are *variable hypotheticals*, a term introduced by Ramsey in *GPC*.⁵ Variable hypotheticals are constituted by ‘a general enunciation’ – the fact of uttering ‘all’ – and ‘a habit of a singular belief’, viz. believing every time I meet a man that he is mortal.

There are two types of variable hypotheticals: laws and chances. Laws are variable hypotheticals where the expectation of ψ given that ϕ is the case is equal to one. If the expectation is lower, the variable hypothetical is a chance. Chances are of the form ‘if ϕ , then there is a probability α that ψ ’. In his note *Chance (C)* Ramsey defines this type of variable hypotheticals as idealised degrees of belief to which those of people approximate. They are idealised degrees of belief in ψ given ϕ .

Chances and laws constitute a ‘system of beliefs and degrees of belief’ (C, 206) and the degrees of belief of an actual person, a user of such system, are an approximation of those deduced from this system together with the factual knowledge people have, according to the laws of probability. Since this system determines the degrees of belief of the users of the system, it determines their expectations too. Variable hypotheticals ‘form the system with which the speaker meets the future’ (*GPC*, 241). When two people have two different systems, they can disagree about the near future, but also about what would have happened if things went differently from the way they actually did. In this sense, we disapprove someone’s actions by stating that had he acted differently things would have gone otherwise. The counterfactuals a person accepts or asserts strictly depend on the variable hypotheticals that constitute his system of beliefs and degrees of belief (*GPC*, 249, emphasis in original):

In this case in which is e.g. the normal one when we say ‘if p had happened q would have happened’, $p \rightarrow q$ must follow from a hypothetical (x). $\phi \rightarrow \psi$ and facts r , $p \rightarrow q$ being an instance of $\phi \rightarrow \psi$ and q describing events not earlier than any of those described in pr . A variable hypothetical of this sort we call a *causal law*.

Counterfactuals are instances of variable hypotheticals, but as they are expressed, counterfactuals are enthymematic linguistic entities.⁶ The assertion of a counterfactual requires some implicit factual knowledge r . The information expressed in the antecedent of the conditional does not exhaust that which a rule for judging presupposes – variable hypotheticals might be rather complex. Hence, in asserting a counterfactual, the speaker is presupposing some implicit facts he knows. We can think of this as follows: since variable hypotheticals are rules for judging that establish our expectations and formation of new beliefs, and have a conditional form, instantiating their antecedents automatically leads to infer an instantiation of their consequent.

In the previous quotation, Ramsey specifies a subgroup of variable hypotheticals: causal laws. If the consequent of the counterfactual refers to events later than those described in the antecedent and in the implicit information r , then the variable hypothetical the conditional is an instance of, is a causal law.

In the next section I will develop Ramsey’s idea that conditionals, and in particular counterfactuals, are enthymematic linguistic entities, instances of rules for judging. I will do so by referring to another note by Ramsey, *The Meaning of Hypothetical Propositions*, where he expands this idea and lays out some requirements that r must satisfy.

⁵ Russell (2009, 40, 92) employs the term *variable implication* to refer to implications that assert a class of implications, like ‘ x is a man implies x is a mortal’. But these implications are, for Russell, proper propositions. The substitution of ‘implication’ with ‘hypothetical’ in Ramsey could be seen as signalling his non-propositional stance.

⁶ Despite the formalisation in the quote, recall that variable hypotheticals are *not* propositions (*GPC*, 239). I argue that Ramsey’s formalisation should be taken in a very loose way – see Section 5 for further discussion.

3.2. The Meaning of Hypothetical Propositions

MHP is one of the notes stored in Pittsburgh.⁷ Written in March 1928, it focuses on conditional sentences. On top of the manuscript of *MHP*, R. Braithwaite, editor of the first collection of Ramsey's papers (Ramsey 1931b) and Ramsey's close friend, writes: 'Notes related to the material in *General propositions and causality* published in both editions of *Foundations* 1931 p. 237 1978 p. 133'.⁸ The similarities between the two texts are indeed striking: the formalisation of laws is the same in both texts, i.e. as $(x)\phi \supset \psi x$.⁹ In *MHP*, as in *GPC*, material implication is acknowledged as one possible meaning of a conditional sentence. The temporal restriction between the antecedent and the consequent of a conditional, seen in the previous section, can be found in *MHP* too. The general account of counterfactuals is the same, as it will soon become clear. These similarities suggest that Ramsey does not change his view on conditionals and laws in the year between *MHP* and *GPC*. I then take *MHP* as completing the account of conditionals sketched in *GPC*. Indeed, in *MHP* Ramsey details further his account of counterfactuals.

In *MHP* Ramsey investigates the meaning of conditional sentences. Often, the meaning of 'if p then q ' is given by the corresponding material implication $p \supset q$ – 'if p then q ' means $\neg p \vee q$. This is the *material* meaning. Sometimes, the meaning is *logical*, namely, q follows logically from p . But there are cases where the meaning of such sentences is not exhausted by material implication or logical consequence. In some of these cases, the meaning is *causal*. As when conditionals are 'thought worth stating' (*GPC*, 248) although their antecedent is false or their consequent true – hence the corresponding material implication is true. Conditionals thought worth stating despite the falsity of their antecedents are counterfactuals.¹⁰

Ramsey (*MHP*, 237) discusses three cases of counterfactual conditionals:

- (a) If it had rained, he wouldn't have come;
- (b) if it had rained, he would have come all the same;
- (c) if it had rained, he wouldn't have come (but as it is I don't know).

The difference in the three cases is the truth value of the consequent. In (a) the consequent is *known* to be false, in (b) is *known* to be true. In (c) the consequent is 'doubtful', namely, the speaker does not know whether the man actually came or not, he does not know the truth value of the consequent. This means that the speaker's degree of belief in the consequent is $0 < P(q) < 1$.¹¹ As in *GPC*, in *MHP* Ramsey explains the meaning of counterfactuals, introducing the additional r (*MHP*, 238):

⁷ Note [005-19-01], published in Ramsey 1991b.

⁸ The page numbers refer to *GPC* in the collections Ramsey 1931b and Ramsey 1978.

⁹ This is relevant because in 1927, in *Facts and Propositions*, one year before *MHP*, Ramsey still embraced the view of open generalisations as infinite conjunctions.

¹⁰ Counterfactuals can have other meanings too (see the end of this section), but for the causal meaning Ramsey offers an extensive discussion.

¹¹ Ramsey sketches a reliabilist theory of knowledge in his short note *Knowledge* (in Ramsey 1931b): a belief is knowledge if true, believed for certain and obtained by a reliable process. And there is a proviso on certainty and reliability: we should remain certain of the belief only if reflecting on the method by which it has been acquired does not lower our degree of belief in it. For a discussion of Ramsey's theory of knowledge see Sahlin 1990, Sahlin 1991, Dokic and Engel 2002.

It is clear, however, that we are concerned with an instance of a law, but that this instance is not in general $p \supset q$ but of the form $pr \supset q$, so that ‘if p then q ’ means that $\exists r : pr \supset q$ is an instance of a law, and then something further about r . (Law taken to include tautology).

The account here outlined is the same proposed in *GPC*. But in *MHP* Ramsey also specifies the requirements that r must satisfy. First, r must be true. r must be, at most, a conjunction of propositions not containing \vee , \exists and \neg . Furthermore, r should not be incompatible with p .¹² Namely, $\neg(p \wedge r)$ should not be an instance of any law (*MHP*, 238).

Ramsey does not fully explain why some logical operators should not appear in proposition r . He justifies the exclusion of disjunctions so as to avoid the possibility that the true disjunct could be incompatible with the antecedent of the counterfactual. It follows that r cannot be a material conditional either, for it would be a disjunction with one disjunct potentially incompatible with the antecedent of the conditional. But he does not suggest arguments for the other cases. Here is my attempt: existential quantifiers would introduce disjunction again. Ramsey’s exclusion of negation is justified if we accept ‘the determinable no’ (*MHP*, 238). This might refer to Johnson’s distinction in his *Logic* between *determinable* and *determinate* properties or predicates, that Ramsey knows.¹³ Very roughly, a determinable is a class, like *color* and a determinate is one of its elements, like *blue*. A determinable can be seen as a list of alternative determinates¹⁴ and this would reintroduce disjunction in r .¹⁵

r is usually implied by the context and it often refers to events not later than stated in q . A further temporal restriction is applied to r in certain cases: when the consequent of the counterfactual is true or doubtful (cases (b) and (c)), r should not refer to events simultaneous to the utterance of the conditional.

Generally, when r is limited only by this temporal restriction, it is possible for ‘if p then q ’ and ‘if p then not- q ’ to be both *true* (*MHP*, 239).¹⁶ Ramsey discusses an example where p is ‘there was no meeting’ (and is false) and q is ‘I went for a walk’. Then (a) ‘if p then q ’ and (b) ‘if p then $\neg q$ ’ are both acceptable if the r s are different. Ramsey takes $r_a = r_1 \wedge r_2$, where $r_1 =$ ‘I am in health live exercise etc’ and $r_2 =$ ‘the secretary is careful’, and r_b as the conjunction $r_1 \wedge r_3$ where r_1 is the same of case (a) and r_3 is ‘I received a notice of a meeting’. When the r satisfies *only* the temporal restriction, it is possible for both conditionals to be acceptable for a person – notice, for instance, that r_3 does not seem compatible with p , according to Ramsey’s definition, for it cannot be the case that there was no meeting and I received a notice of a meeting. The relevant point is that the two conditionals differ for their consequents, and even for their antecedents, for r is a proper part of the antecedent, one of its conjuncts. Moreover, counterfactuals are often used to express disagreement, and

¹² If p is impossible, namely contrary to a law, then anything can follow from it, cf. *MHP* (238, fn. 1).

¹³ For instance, Ramsey mentions Johnson’s work in *Facts and Propositions* (Ramsey 1931b, 152, fn. 1), as well as in *MHP* and in other notes in Ramsey 1991b.

¹⁴ See Johnson’s *principle of alternation*.

¹⁵ This is a tentative explanation. It seems reasonable since it would clarify why Ramsey discusses only disjunction, as well his expression ‘the determinable no’. For Johnson’s determinable and determinate distinction see Prior 1949a, 1949b and Poli 2004.

¹⁶ Ramsey uses the word ‘true’, but it should not be taken in the sense a material implication is said to be true. If this were the case, this point would not be necessary, since if read as material conditionals, all counterfactuals are always true, no matter what truth value the consequent has. The additional r would make no difference: being the antecedent false, the conjunction $p \wedge r$ would be false as well. Perhaps today, in this context, we would prefer ‘acceptable’ or ‘true in the most similar world(s)’ instead of ‘true’, and I suggest reading the conditional this way, as non-classical. I will return to this issue in the last section.

in this sense, the two counterfactuals could be asserted by two people in relation to their respective systems of beliefs and factual knowledge.

This for what concerns causal counterfactuals. However, in *MHP* Ramsey applies the account so far outlined also to other types of conditional sentences. Among the *causal* conditionals, Ramsey includes also conditionals that have true consequents and true or doubtful antecedents. And these cases too are instances of variable hypotheticals. Ramsey's example of a causal conditional with a doubtful antecedent and a true consequent is: '(He's not come) Not necessarily, because he would anyhow \notin if he came) have gone by now' (*MHP*, 239). This example also gives a chance to Ramsey to argue that contraposition does not hold for this causal meaning. Saying 'if p then q ' is not equivalent to say 'if q then $\neg p$ '. The doubtful antecedent-true consequent case just mentioned is not equivalent to 'if he were still here, he wouldn't have come' (*MHP*, 239, fn. 6). The failure of contraposition is blatant if we think that to assert a conditional we need additional information r that makes the conditional an instance of a variable hypothetical. In many cases, that very same information is not sufficient to assert the contraposed conditional, which might require different r and hence might be an instance of a different variable hypothetical, as in Ramsey's example.

In *MHP* Ramsey examines also other meanings conditionals can have. Ramsey classifies conditional sentences into five categories according to their meaning: material, logical, causal, epistemic and spurious. The first three have already been presented, let us briefly focus on the latter two. Epistemic conditionals are covered by the inferential account with the additional r , as causal conditionals. However, the definition of this category seems a bit elusive. This is mainly because the application of this label does not depend on the truth value of the clauses nor on some temporal restriction between antecedent and consequent. Rather, it appears to denote potential conditionals that have not been asserted while they should have, or past tense conditionals. The conditional has an '*epistemic sense*' when (*MHP*, 240):

q was or might have been or ought to have been inferred from p either by a given person on a given occasion or by any person of a certain sort in any occasion of a certain sort. Instances of this are; 'if he had had a mole on his wrist, he would have been the murderer'; 'his having a mole implied that he was the murderer', 'because he had a mole, he was the murderer'.

As Ramsey's examples show, epistemic conditionals can have different verb moods, nonetheless, they all require the same analysis. The categorisation indicative/subjunctive hence does not apply. And, as for the causal conditionals, the analysis pursued does not depend on the truth value of the antecedent of the conditional. In the excerpt above, the first conditional is a counterfactual, with a false antecedent, the second and the third are factuais, where both antecedent and consequent are true.¹⁷ This suggests that not all counterfactuals are causal, there are epistemic counterfactuals as well. And if this is correct, not all variable hypotheticals of which counterfactuals are instances are causal laws.

The conditional 'if p , q ' has an epistemic meaning if it was known or was a logical consequence of the set of things known and variable hypotheticals, this set not including p or $\neg p$, or p not being logically implied by this set (i.e. being a logical consequence) but being known independently. According to Ramsey, when a belief is a logical consequence

¹⁷ In discussing the true antecedent-true consequent case in causal conditionals, Ramsey says that it is usually expressed by 'because' - 'Because p , q ' (*MHP*, 239). The same idea can be found in *GPC* (248).

of things known together with some general propositions expressing ‘our correct habits of inference’, then the belief is ‘virtually known’ (*MHP*, 240). The epistemic conditional can also be a conditional that might have been asserted or might have been a logical consequence of some observations or some things everyone is expected to know. Although Ramsey’s definition is somewhat vague, it is clear that this type of conditionals is analysed in the very same way the causal one is: the epistemic conditional was or might have been asserted, had some information r been available together with the system of variable hypotheticals.¹⁸

Lastly, in *MHP* Ramsey discusses what he calls the *spurious* conditionals. These conditionals are not truly hypothetical, they simply assert a strict logical consequence from what the speaker knows. In this sense, ‘if anyone says p says truly’, is a spurious conditional because it does not express anything hypothetical but simply p , that follows from what the subject knows.

To understand how Ramsey’s account of counterfactuals actually works, it is useful to consider an example and apply to it what we have learned so far.

4. The Cake Example

The situation Ramsey (*GPC*, 246-7) describes is the following. A man has a cake but he decides not to eat it because he thinks he will get a stomachache. According to Ramsey, the man’s belief, on which he acts, is ‘if I eat the cake I will have a stomach ache’. We look at the man but we think, instead, that he is wrong, if he eats the cake he will not have a stomachache. Technically, Ramsey argues, we are not contradicting him. We know that the material implication is true: we have no reason to think that he will eat the cake before the event, and after we know he did not. Then, the question is why we disagree, ‘since he [the man] thinks nothing false, why do we dispute with him or condemn him?’ (*GPC*, 247). Because, according to Ramsey, before the event we entertain different degrees of belief in q given p . The man has a very high degree in q (stomachache) given p (eating the cake). He is certain.¹⁹

On the other hand, our degree of belief in q given p is quite low. We are pretty sure – but not totally sure – that the man will not eat the cake, hence we believe that ‘either he will not eat the cake or he will get a stomach ache’ to a quite high degree. We have a high degree of belief in the material conditional before the event. But we also think more probable that the man will not have a stomach ache than he will, given that he eats the cake, i.e. $P(\neg q|p) > P(q|p)$.²⁰ Indeed (*GPC*, 247):

Before the event we do differ from him in a quite clear way: it is not that he believes p , we \bar{p} ; but he has a different degree of belief in q given p from ours; and we can obviously try to convert him to our view.

¹⁸ ‘To say “ p \bar{q} ” might have been known, is, if the implied conditions are suitably chosen, very much the same as to say “if p then q ” where the if is causal’ (*MHP*, 241).

¹⁹ This means that $P(q|p) = 1$. Since $P(q|p) + P(\neg q|p) = 1$, $P(\neg q|p) = 0$. This amounts to $\frac{P(p \wedge \neg q)}{P(p)} = 0$. We know that $P(p) > 0$, since $P(q|p)$ is not undefined. Then $P(p \wedge \neg q) = 0$, which is equivalent to $1 - P(\neg(p \wedge \neg q)) = 0$. Therefore $P(\neg(p \wedge \neg q))$, that is equivalent to $P(\neg p \vee q)$, equals 1. Namely, $P(p \supset q) = 1$, he believes $\neg p \vee q$ for certain.

²⁰ It is possible that $P(q|p)$ and $P(p \supset q)$ diverge greatly when $P(\neg p)$ is really high, like in this case, where we believe very likely that the man will not eat the cake. This is shown, for instance, in *Edgington 2005*. Take $P(\neg p) = 0.96$, $P(p \wedge q) = 0.01$ and $P(p \wedge \neg q) = 0.03$. Then $P(q|p) = 0.25$ whereas $P(p \supset q) = 0.97$. In this particular case then we would have that $P(q|p) = 0.25$ and $P(\neg q|p) = 0.75$, i.e. $P(\neg q|p) > P(q|p)$.

The famous footnote, source of the Ramsey test(s), appears at the very end of this line. And then Ramsey moves on to discuss the counterfactual situation. We both know, the man and us, that the antecedent of the conditional is false. Namely, we believe for certain that the man did not eat the cake. But we can still dispute what would have happened if he had. The man believes that if he had eaten the cake he would have had a stomach ache. We, instead, think that had he eaten it he would not have been ill. Two people may differ about what would have happened although they both agree about all facts. This is because they have different systems of beliefs and different rules for judging (*GPC*, 247):

The meaning of these assertions about unfulfilled conditions, and the fact that whether the conditions are fulfilled or not makes no difference to the difference between us, the common basis, as we may say, of the dispute lies in the fact that we think in general terms. We each of us have variable hypotheticals (or, in the case of uncertainty, chances) which we apply to any such problem; and the difference between us is a difference in regard to this.

I now apply the recovered notions about variable hypotheticals and r to Ramsey's cake example, to see how the enthymematic account actually works. The man has a cake and decides not to eat it and, after his decision, he thinks that if he had eaten it he would have been ill. We disagree. The man's conditional is:

(1) If I had eaten the cake I would have been ill.

Formally, we can represent it as

(1) $E(m, c) \rightarrow I(m)$

where E and I stand for 'eating' and 'ill' respectively and m and c are constants for the man and the cake.²¹

According to Ramsey, we have to find the information r that would make the conditional an instance of a variable hypothetical the subject endorses, which would allow him to infer the consequent. Furthermore, r should satisfy the requirements listed in *MHP*. Suppose, then, that the man knows that the thing he is staring at is a chocolate cake, but rotten (both true). Allegedly, the man knows that he is a person – true. Therefore, the variable hypothetical he believes and which leads him to infer that he would have been ill could be 'if a person eats a rotten chocolate cake he/she will be ill'. For a conditional $p \wedge r \rightarrow q$ to be an instance of a variable hypothetical $\forall x(\varphi x \rightarrow \psi x)$ means that $p \wedge r = \varphi$ and $q = \psi$. Let us try to unfold this. The variable hypothetical 'if a person eats a rotten cake he/she will be ill' can be rewritten as $\forall x, y(P(x) \wedge CH(y) \wedge R(y) \wedge E(x, y) \rightarrow I(x))$. P stands for 'being a person', CH for 'being a chocolate cake', R for 'being rotten' and E and I , as before, for 'eating' and 'being ill'. r in this case is the conjunction $r_1 \wedge r_2 \wedge r_3$, where $r_1 = P(m)$ and $r_2 = CH(c)$ and $r_3 = R(c)$. Thus the man believes $(P(m) \wedge CH(c) \wedge R(c) \wedge E(m, c))$, which corresponds to $p \wedge r$ and is an instance of the variable hypothetical $\forall x, y(P(x) \wedge CH(y) \wedge R(y) \wedge E(x, y) \rightarrow I(x))$. This is then triggered and let the man infer that he will

²¹ In this rough formalisation I use first-order logic. This choice is not only harmless, but also justified by the fact that Ramsey allows universal quantifiers in r . Here, the choice of \rightarrow instead of the horseshoe is motivated by the idea that in this example the meaning of the counterfactual is clearly not material. In the next section I will return to Ramsey's use of the horseshoe.

be ill, i.e. $I(m)$. This is a very simplified example, but it is a glimpse of how Ramsey's account should work.

Let's now consider our case. We disagree with the man, because of variable hypotheticals. Namely, the variable hypotheticals triggered in this situation are different for the man and us, respectively.

Notice that, in general, people can share some of the same variable hypotheticals (as it is often the case with laws of nature), but in some circumstances different information – all true – may be available to different people and then different variable hypotheticals may be triggered.

Notice also that there can be two ways of disagreeing. Two people can disagree because they have different information, they know different things. Or they can disagree because, although they have the same factual knowledge, this factual knowledge triggers different variable hypotheticals that lead them to different conclusions and make them assert different counterfactuals.

For instance, we might not know that that cake is rotten and simply think that 'If a person eats chocolate he/she will be good'. We know that that man is a person ($r_2 = P(m)$). The variable hypothetical triggered might then be $\forall x, y (P(x) \wedge CH(y) \wedge E(x, y) \rightarrow G(x))$. We would disagree with the man saying that 'if he had eaten the cake he would not have been ill' (i.e. $E(m, c) \rightarrow \neg I(m)$) and we take 'being good' to be the contrary of 'being ill', i.e. $G(x) = \neg I(x)$. Then, $p \wedge r_1 \wedge r_2 = E(m, c) \wedge CH(c) \wedge P(m)$ and $q = G(m) = \neg I(m)$.

The counterfactuals a person asserts strictly depend on his system of beliefs and degrees of belief, and the fact that chances are part of this system as a type of variable hypotheticals suggests that this view can also account for counterfactuals containing probabilistic expression. For instance, suppose I utter this counterfactual on a clear sunny day: 'if it had been cloudy, there would have been 60% probability of rain'. According to Ramsey, this, together with additional implicit propositions, should be an instance of a variable hypothetical I have in my system, which in this case must be a chance like: 'if ϕ then 60% probability of ψ ', where ϕ is a conjunction of the antecedent of the counterfactual, 'it is cloudy' and other propositions, like 'it is windy'. But even a less explicit counterfactual like 'if it had been sunny, we would probably be at the beach at the moment' can be seen as an instance of a variable hypothetical where the expectation of ψ given ϕ is lower than 1.²²

5. Material Conditional, Indicatives, Subjunctives and Counterfactuals

Contrary to current practice, Ramsey labels conditionals according to their meanings. For causal conditionals, Ramsey considers five cases (false antecedent and true, false or doubtful consequent; true consequent and true or doubtful antecedent) that turn out to be cases where the corresponding material implication is already known to be true. Indeed, even in the 'doubtful' cases considered (false antecedent-doubtful consequent and doubtful antecedent-true consequent), the material implication corresponding to the conditional sentence is already true, no matter what truth value the doubtful clauses will take. The same applies to the *epistemic* conditionals: the three examples (one counterfactual, two true-true cases) overlap some of those belonging to the causal category and since Ramsey applies the

²² 'When ϕ and nothing else relevant, always expect ψ with degree of belief p ' (C, 207).

same enthymematic analysis to epistemic conditionals too, I argue that a conditional can have an epistemic meaning when the corresponding material implication is true.

If this reading is correct, it suggests two things. First, there is a place for the material implication in Ramsey's account. Second, Ramsey has an original classification of conditionals, so that counterfactuals do not deserve a specific analysis on their own. Let us consider these two points more in detail.

Let us start by material implication and Ramsey's use of it. Both in *GPC* and in *MHP*, Ramsey uses the horseshoe symbol to formalise conditional sentences, whether it is a counterfactual, or a causal conditional, or epistemic, etc. But the horseshoe \supset stands for the material conditional. Surprisingly, Ramsey uses \neg also to formalise variable hypotheticals, which he explicitly claims not to be propositions, e.g. *GPC* (239, 241)! Perhaps it is not something that Ramsey feels as a problem or he simply does not care – after all, both *GPC* and *MHP* are notes and not papers ready to be published. I suggest ignoring Ramsey's formalisation. Moreover, if taken literally, the formalisation of counterfactuals trivialises Ramsey's account. Indeed, it would be pointless to add some implicit true information r to the false antecedent p : the conjunction $p \wedge r$ would be false, reducing Ramsey's analysis to the material interpretation, for which all conditionals with false antecedent are true. And this is clearly not the aim of the discussion.

But formalisation aside, the material conditional does play a role in Ramsey's account. In *MHP*, Ramsey lists material implication as one of the possible meanings a conditional sentence can express. However, the meaning of a conditional sentence often goes beyond material implication. Material conditional and the enthymematic account are not exclusive, but they can, and perhaps should, coexist in a theory of conditionals. In the last part of *MHP*, Ramsey briefly focuses on the different ways language may signal the meaning of a conditional statement (i.e. whether it is causal, material, logical or epistemic) (*MHP*, 242, emphasis in original):

Language has subtle ways of distinguishing the different senses of 'if'; consider for instance
 Everyone voted for it
 So if he was there, he *must* have voted for it (material only)
 But if he was there, he *would* have voted against it (material also causal)
 \therefore he was not there.

The (modal) verb signals how we should read the conditional. But one meaning does not exclude the other. The second conditional of Ramsey's example is both material *and* causal. The first conditional is material because we know that everyone voted for it, hence he was not there or he must have voted for it, since it passed unanimously.

Furthermore, material implication is the only proper tool to determine the truth value of a conditional. In a sense, what we look at depends on what we are interested in, whether it is the truth value of a conditional assertion or its epistemology and pragmatics (*GPC*, 248):

'If p then q ' can in no sense be true unless the material implication $p \supset q$ is true; but it generally means that $p \supset q$ is not only true but deducible or discoverable in some particular way not explicitly stated. This is always evident when 'If p then q ' or 'Because p , q ' (*because* is merely a variant on *if*, when p is known to be true) is thought worth stating even when it is already known either that p is false or that q is true. In general, we can say with Mill that 'If p then q ' means that q is inferrible from p , that is, of course, from p together with certain facts and

laws not stated but in some way indicated by the context. This means that $p \supset q$ follows from these facts and laws, which if true is in no way a hypothetical fact.

If we want to know if a conditional sentence is true or false, we must look at the corresponding material conditional. But if we want to know what the speaker conveys by asserting a conditional sentence, what makes him assert that sentence, or why we disagree with him about what would have happened, material conditional is not enough. If we pursue an account of the meaning of conditional sentences in everyday life, material implication cannot do the workload.

The previous excerpt also explains why Ramsey applies his analysis of counterfactuals also to other conditionals. As for counterfactuals, in the other two cases (true antecedent and true consequent, and doubtful antecedent and true consequent) the corresponding material implication is already known to be true, hence the conditional sentence cannot express a hypothetical fact.²³ The two levels of analysis, one meant to determine the truth conditions of a conditional sentence, another aimed at understanding the epistemology of a conditional, are connected. When a conditional is known to be true, for its corresponding material implication is, it cannot express a bet, for there is nothing to bet on. So the degree of belief in q given p – defined by Ramsey (*TP*, 180) as a bet on q given that p will turn out true – cannot be the meaning of these true assertions. According to Ramsey's footnote, 'if p then q ' expresses the fixation of the degree of belief in q given p , when p and q are uncertain. Fixing the degree of belief in q given p describes a deliberation to make, which is only possible about the future.²⁴ And when the truth or falsity of a sentence is settled, namely, the events to which the sentence refers already happened (or did not), there is no deliberation to be made about the events there described, for there is no action (broadly understood) that can affect the occurrence of past events.²⁵

Of course, the fact that the same enthymematic account covers not only counterfactuals but also other conditionals that today would be labelled as indicatives highlights that Ramsey's categorisation does not reflect the current practice. In contemporary literature, conditionals are usually divided into indicatives and subjunctives, according to a grammatical feature, viz. the mood of the verbs involved. Subjunctive conditionals are often identified with counterfactuals, although the two categories do not overlap perfectly.²⁶ The grammatical difference seems to require a different (logical) analysis and hence different truth conditions or acceptability conditions. One of the most famous argument for distinct analyses is the Oswald-Kennedy pair (cf. *Adams 1970*):

- (1) If Oswald hadn't shot Kennedy, then no one else would have;
- (2) if Oswald didn't shoot Kennedy, then no one else did.

We are inclined to accept the first (or to say that it is true) and reject the second (or to say that it is false). The difference between the two conditionals suggests that different analyses are required. Adams (1975) explains this difference by the different degree of evidential support the two cases respectively need. And he then develops a probabilistic logic

²³'This means that $p \supset q$ follows from these facts and laws, which if true is in no way a hypothetical fact' (*GPC*, 248).

²⁴ Recall: 'that I cannot affect the past, is a way of saying something quite clearly true about my degrees of belief' (*GPC*, 250).

²⁵ If I know that p did not occur or that q happened, or that p occurred but q did not, I cannot properly set a bet on what will happen ($q?$) given that some conditions occur (p).

²⁶ See *Anderson 1951* for a famous example of a subjunctive which is not a counterfactual.

for indicative conditionals like (2), suggesting that counterfactuals, as (1), can be seen as *epistemic past tense* of indicatives.

Ramsey does not distinguish conditionals according to truth value of their antecedent alone or the moods of the verbs, but he notices the linguistic difference. However, for him, this is not a reason to pursue different analyses for the two cases. In *GPC* Ramsey discusses an Oswald/Kennedy case and offers his explanation of the indicative/subjunctive distinction.²⁷ Ramsey explains the difference of the moods employed through the different variable hypotheticals and facts (*rs*) involved (*GPC*, 249):

Corresponding to the kind of laws or facts intended we get various subtle syntactic variations. For instance, ‘If he was there, he must have voted for it (for it was passed unanimously), but if he had been there, he would have voted against it (such being his nature)’. [In this, law = variable hypothetical].

Let us try, then, to explain the Oswald-Kennedy example following Ramsey. The difference between the two conditionals must be a difference in the information implied and the generalisations they are instances of. Then, we need to find additional facts or laws *r*, implied by the context, that, together with the antecedent of the conditional, trigger a variable hypothetical that makes it possible to infer the consequent. For instance, consider the conditional ‘if Oswald hadn’t shot Kennedy, then no one else would have’. Our *r* might be that Kennedy was in fact shot dead, that no one else except Oswald had good reasons to kill Kennedy (it is easy to see that someone might disagree with us), or that Oswald was the only suspect. The conditional suggests to think about who else would have had good reasons to kill Kennedy. If we do not find anyone else, then we accept the conditional; otherwise, we reject it – and perhaps reply: ‘if Oswald hadn’t shot Kennedy, then someone else would have!’. Now the second conditional: ‘if Oswald didn’t shoot Kennedy, then no one else did’. Here the conditional requires to consider the possibility that, actually, Oswald was not the shooter of Kennedy. However, it does not demand to suppose that Kennedy was not shot at all, and our knowledge that Kennedy was shot dead can be included in our *r*. Hence, supposing that Oswald did not shoot Kennedy and knowing that Kennedy was shot prevent us to conclude that no one else did (i.e. no one else shot Kennedy) for someone to be shot there must be someone shooting (by the way, this could be our variable hypothetical) – so if Oswald did not shoot Kennedy, then someone else did! Rephrasing Ramsey: ‘if Oswald did not shoot Kennedy, then someone else did (for he was shot dead), but if Oswald hadn’t shot Kennedy, no one else would have (for Oswald was the only one to have good reasons to kill Kennedy)’.

These examples suggest that the speaker uses a different mood to convey different information and to express different general beliefs. They also show that the notion of variable hypothetical is a useful tool, which can easily account for this kind of difference.

6. Conclusion

This paper has shown that Ramsey has an account of counterfactuals. I recovered his account referring mainly to two works: *GPC* and *MHP*. Ramsey’s idea is that a counterfactual is an instance of a variable hypothetical. But the generalisation is instantiated by ‘if *p* and *r*, then *q*’ rather than by ‘if *p*, then *q*’, where *r* is implicit information. In *MHP*, Ramsey

²⁷ Edgington too notices Ramsey’s Oswald/Kennedy case, in MacBride et al. 2020.

applies this account also to conditionals that are not counterfactuals, casting doubts on the current classification of conditionals.

Many theories of conditionals have been inspired by Ramsey or share many similarities with the account outlined here. For instance, Chisholm (1946), Goodman (1947) and Rescher (1964) have the same intuition about counterfactuals as enthymematic linguistic entities, strictly related to generalisations. Similarly, and more recently, Kratzer (1981), Stalnaker (1968), Lewis (1973), Adams (1975) are all explicitly inspired by Ramsey's footnote. The final aim of this work is to show that Ramsey's view is not out of date, rather it contains suggestions and food for thought for contemporary theories of conditionals.

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